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The results of a questionnaire survey of college freshmen about specific exam-taking procedures are reported. The questions were designed to assess recommendations made in the student handbook, Examination Skills and Techniques. Administered were 36 questions comprising nine-item scales, to one of four representative samples of approximately 1,000 freshmen entering Michigan State University. The purposes were: (1) to assess the degree of exam sophistication among college freshmen, (2) to determine correlation among diverse elements, (3) to determine whether exam-wise students are influenced by popular misconceptions, and (4) to determine whether there are differences in exam sophistication among students who differ in ability or achievement. Results show that freshmen appear quite knowledgeable regarding certain elements, but highly deficient on others. Students are clearly confused where popular misconceptions are found. Diverse elements are positively correlated, giving added credence to the recommendations found in the student handbook. Differences were found in exam sophistication among students who differed in ability and achievement, slightly favoring low achievers. (KP)

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# VARIATIONS IN EXAM SOPHISTICATION AMONG COLLEGE FRESHMEN*

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Interest in test-wiseness as a factor in exam performance has received increased attention recently. Wahlstrom (4) in a paper at the AERA Convention last year reported gains in performance for 9th graders who were assessed on a special social studies test designed to maximize "give away" clues. Moore, et al (3) reported that exam taking procedures can be altered with the use of programmed materials. Millman (2) attempted to assess the pervasiveness of exam-wiseness by means of specially constructed scales.

This paper reports results from a questionnaire survey approach to the problem where college freshmen respond to questions about specific exam-taking procedures. The questions on exam sophistication were designed to assess recommendations made in the student handbook, Examination Skills and Techniques, published last year by Cliff's Notes (1). This book evolved from an extensive survey of the research literature and it attempted to base recommendations on documentation by research report, where possible, consistent logic, where applicable, and as a last resort, informed judgment.

Thirty six questions were administered as nine-item scales to one of four representative samples of approximately 1000 freshmen each, who entered Michigan State University in Fall, 1968. This procedure of administering different abreviated scales to different groups was a result of this survey being but a part of a local MSU version of a CAPE or National Assessment type survey of cognitive knowledge.

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*Paper presented at the annual meeting of the American Educational Research Association, February, 1969, Los Angeles.

This investigation had several purposes. The first was to assess the degree to which college freshmen are knowledgeable in the ways of taking examinations. A methodological purpose was to determine whether diverse elements in exam-wiseness are positively correlated or whether even exam-wise students are influenced by popular misconceptions about exam-taking procedures. Finally, a purpose was to determine whether there are differences in exam sophistication among students who differ in ability or past or future achievement.

Exhibit A presents inventory directions and the response key. Table I presents, first, exam-taking recommendations and illustrative items designed to assess whether college freshmen tend to follow the procedures proposed. Following each item is the a priori-determined response key proposed as the "exam-wise" response. For example, answering affirmative (responses 1 or 2) to question 1 about the attitude toward changing or not changing answers is regarded as exam-wise. Table I next provides the percentage of beginning freshmen who marked the exam-wise answer (1 or 2) and then the percentage marking the opposite extreme (4 or 5). Note that response 3 tabulations on the 5-response scale are omitted providing a buffer between exam-wise and exam-foolish responses. Table I finally provides internal consistency data for the illustrative items. Students scoring in the upper and lower 27% on the nine-item exam-wiseness scales were isolated. The percentage of each group responding in the exam-wise direction on the illustrative item is provided together with the difference in percentages for these high and low scoring groups.

There are undoubtedly many who would disagree with what are recorded in Table I as "exam-wise" answers. The first recommendation that students change answers is probably one of the more controversial. Analysis of several study methods manuals found the majority of writers recommending not

changing answers and only one cautiously suggested change. Yet, each of six objective studies on this issue showed more changes tend to go from wrong to right than from right to wrong--thereby benefiting the student. Logic too, favors this view. Why should the student not go with his second choice? He has had a chance to reflect; he has possibly learned from other items in the test and may even have detected give away linking items. The reason for this misconception is also apparent. We have all as students had first-hand experience in seeing answers on tests we have taken go from right to wrong. But which questions do we examine when we receive our tests back? Right! The ones which were wrong. We concentrate on items which could only have gone from wrong to wrong or right to wrong and omit the far more prevalent alternative which is from wrong to right. Statistics for this item in Table I echo this misconception. Only 25% of the freshmen believed in changing answers while 57% opposed the practice. The internal consistency figures, however, showed 46% of the exam-wise students to agree with the practice in contrast to only 6% of the students with low scores on the nine-item scales.

The second item gets at what might be considered the "College Board Syndrome" since they are the major national group encouraging students to omit questions because of fear of the penalty for guessing. Evidence from research studies, however, suggest that students are usually better off to not be intimidated.

The third recommendation runs counter to a popular misconception which might be labeled "the pious faith in the law of averages syndrome." Certain alternatives to examination questions (like certain numbers on unevenly weighted dice) will not be used as regularly as other alternatives

(or numbers). One should act in the direction of a detected response set rather than to keep hoping that the law of averages will be satisfied.

Other recommendations refer to general approaches such as to not be oriented to look for "trick" questions, to pace ones progress, and to not get bogged down, to outline and proof essays, etc. College freshmen seem to accept these general approaches. Other more subtle procedures such as using qualifications or absolutes, vowel indicators, and avoiding "the bizarre extra foil" appear to provide little of a problem to these freshmen. In contrast, they seem unaware of the longer answer cue or the two similar or two opposite answer cue where only correct concepts generally receive this degree of elaboration on a given question.

The last line in Table 1 presents median percentages across all 36 items. These show that the exam-wise answer is selected more often than the exam-foolish answer (49% versus 31%). While this is somewhat comforting in showing that, on the average, freshmen are more right than wrong, there are many areas where only a minority indicate the exam-wise response.

The internal consistency indices to the right of the table are all uniformly positive. This tends to give added support to the a priori keying for the exam-wise practices. At the same time this supports the view that identifiable groups of college freshmen are already quite versed in exam sophistication and this very likely introduces an unintended contaminating factor into test scores.

Table 2 presents exam-taking procedures which differentiated among four high school grade-point-average groups, five college GPA groups, and three ability level groups determined by the College Qualification Tests. As expected, many of the practices are favored more often by the higher

achieving and ability groups. They tend to follow procedures such as taking questions at face value, changing answers, outlining and correcting essays. They also seem more aware of subtleties such as the cue value of absolutes and qualifications, vowel indicators, and avoiding the bizarre foil.

Even more interesting is that difference between high and low groups, while significant (and usually at the 5% level or higher), is usually quite small. Furthermore, many of the exam-wise procedures are actually favored by the lower achieving or ability groups. They appear more aware of not only general procedures such as to use all the exam time and to answer easier questions first, but also subtleties such as to act in the direction of a detected response set to select one of two similar or different choices, or to avoid omitting items even under a guessing penalty.

This was quite distracting, at first, since these items were being considered as tryout items which could be used in a standardized exam-wiseness scale. An initial thought was that a scale of this kind would not only assess exam sophistication and be of value in instruction and diagnosis, but that it would also have potential as a predictor of academic success. In retrospect, this expection now appears unduly optimistic. High achieving students at the beginning college level should not be expected to score uniformly high on exam-wiseness as assessed here. Nearly all high achievers have enjoyed a history of academic success in high school without resorting to subtle and often laborious practices which are here considered to be exam-wise, such as using all their exam time, rechecking their work, pacing their progress, etc. Courses in study methods are also available in many high schools. To the degree that they touch upon exam-taking skills (as they

should) as well as mechanics of study, this would result in the lower achieving student, who is more likely to be enrolled in study methods courses, knowing more about exam subtleties than the high achieving student. In retrospect, one should not expect a scale based upon exam-taking skills to show a high degree of relationship to academic performance.

In summary, the data do bear upon the three purposes initially proposed. Freshmen appear quite knowledgeable with regard to certain elements in exam sophistication but, at the same time, highly deficient on other elements. Students are clearly confused in areas where popular misconceptions are found. The data also show that the diverse element in exam sophistication are positively correlated. At the same time, this positive correlation gives added credence to the exam-taking recommendations. Finally, differences were found in exam sophistication among students who differed in ability and achievement. These differences did not always favor the high achievers, however, but rather low achievers were actually more exam-wise with regard to a number of exam-taking practices.

# VARIATIONS IN EXAM SOPHISTICATION AMONG COLLEGE FRESHMEN*

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## Exhibit A

### Directions and Scoring Key for Questionnaire

This section asks about procedures you use in taking OBJECTIVE EXAMINATIONS (true-false, multiple-choice, etc.). You are to consider each of the statements to determine how often you tend to act in the way specified. Use the following key:

KEY:
1. Almost always (over 90% of the time)
2. Usually (75% - 90% of the time)
3. Often (26% - 74% of the time)
4. Sometimes (10% - 25% of the time)
5. Rarely (less than 10% of the time)

### Table 1

Illustrative Questionnaire Items, Freshmen Tabulations, and Internal Consistency Item Statistics.

| | Exam-Wiseness Key | All Freshman Responses % Exam-Wise | % Exam-Foolish | Internal Consistency Hi 27% | Lo 27% | Index |
|---|---|---|---|---|---|---|
| 1. Do change answers. Do you find that going back over an exam and changing answers is advisable? | 1-2 | 25 | 57 | 46 | 6 | +40 |
| 2. Avoid omitting many questions. When you are told that an exam is to be scored with a penalty for wrong answers do you find it advisable to skip questions about which you have but a vague idea of the correct answer? | 4-5 | 28 | 55 | 42 | 13 | +29 |
| 3. Benefit by (don't fight) a detected response set. If most of the questions on a true-false test have had "true" as the correct answer, do you tend to answer new questions about which you are un certain as "false?" | 4-5 | 31 | 41 | 56 | 13 | +43 |
| 4. Accept questions at face value. When a true-false question appears to be correct but you wonder about the accuracy of a certain modifying phrase, do you tend to go along with the apparent intent of the question and to mark the question as true? | 1-2 | 52 | 20 | 74 | 34 | +40 |

*Paper presented at Feb. 6, 1969 Meeting of AERA, Los Angeles.

| | | Exam-Wiseness Key | All Freshman Responses % Exam-Wise | % Exam-Foolish | Internal Consistency Hi 27% | Lo 27% | Index |
|---|---|---|---|---|---|---|---|
| 5. | Qualifications indicate correct answers; absolutes wrong answers. When answering a true-false question about which you are uncertain, do qualifications such as "sometimes, generally" in the statement lead you to mark it as false? | 4-5 | 55 | 24 | 80 | 29 | +51 |
| 6. | Long answers are more often right. When one of the possible answers on a multiple-choice test is much longer than the other answers, do you regard this longer answer as more likely to be correct rather than incorrect? | 1-2 | 5 | 88 | 10 | 1 | +9 |
| 7. | One of two similar or opposite answers are more often correct. If a multiple-choice question has two choices which are very similar as possible answers, do you tend to choose one of these as your answer rather than the other choices? | 1-2 | 32 | ~~28~~ 48 | 51 | 13 | +38 |
| 8. | Use vowel indicators. When you run into an incomplete statement type question such as "He is an _____," do you tend to choose an answer which begins with a vowel sound (a, e, i, o, u)? | 1-2 | 74 | 16 | 92 | 49 | +43 |
| 9. | Avoid the bizarre response. If a difficult question has a very complex and strange word as a possible answer, do you tend to select this answer rather than others about which you are also uncertain? | 4-5 | 75 | 10 | 95 | 50 | +45 |
| 10. | Go middle in a number series. When possible answers to a problem on an arithmetic test are 6, 8, 10, or 12 respectively, do you tend to select extreme answers 6 or 12 in contrast to 8 or 10 if you could not solve the problem? | 4-5 | 77 | 6 | 88 | 68 | +20 |
| 11. | Pace yourself on the examination. Do you begin a test by answering the easiest questions first? | 1-2 | 31 | 56 | 54 | 14 | +39 |
| 12. | Have a plan for an essay answer? Before you begin writing an essay examination, do you first try to arrange your essay into a logical order? | 1-2 | 70 | 17 | 89 | 50 | +39 |

| | Exam-Wiseness Key | All Freshman Responses % Exam-Wise | % Exam-Foolish | Internal Consistency Hi 27% | Lo 27% | Index |
|---|---|---|---|---|---|---|
| 13. Correct essay answers. Do you tend to go back to reread and make changes in essay answers--even if the effect is to make the essay look somewhat messy? | 1-2 | 35 | 44 | 62 | 10 | +52 |
| 14. Write on all essay questions. In taking an essay test, do you try to write something on every question rather than to do a comprehensive job on a few questions? | 1-2 | 37 | 40 | 59 | 20 | +39 |
| 15. Use all the exam time. When taking a very important exam do you find it advisable to recheck your work as many as three or four times? | 1-2 | 42 | 41 | 70 | 13 | +58 |
| Medians across all 36 Items. | | 49.0 | 32.0 | 72.5 | 29.5 | +40.3 |

TABLE 2

Procedures Differentiating Among High School GPA, College GPA, and Academic Aptitude Level Groups.*

| | High School GPA | College GPA | COT General Ability |
|---|---|---|---|
| A. Procedures favored by high groups | | | |
| Don't look for trick questions | Hi | Hi | Hi |
| Change answers | Hi | Hi | Hi |
| Rule out wrong choices | -- | Hi | Hi |
| Pace-by not tying up on difficult questions | Hi | Hi | Hi |
| Outline essays first | Hi | Hi | -- |
| Correct essay answers | Hi | -- | -- |
| Show procedures in problem tests | -- | Hi | Hi |
| Use absolutes and qualifications | Hi | Hi | Hi |
| Avoid the bizarre answer | Hi | Hi | Hi |
| Use vowel indicators | Hi | Hi | Hi |
| B. Procedures favored by low groups | | | |
| Use all exam time | Lo | -- | Lo |
| Pace-by doing easiest first | Lo | Lo | -- |
| Don't skip because of guessing penalty | Lo | Lo | -- |
| Two similar or opposites are often correct | Lo | Lo | Lo |
| Go with a detected response set | Lo | Lo | Lo |

Hi or Lo in one of the grade-point-average or ability test columns indicate a Chi-square value exceeding the 10% level was observed with the indicated high or low group more often following the recommended procedures. Practices with non-significant Chi-squares not reported.

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